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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,939	09/09/2003	Hamid Ould-Brahim	42871-0004	1612
23577	7590	05/14/2007		
RIDOUT & MAYBEE SUITE 2400 ONE QUEEN STREET EAST TORONTO, ON M5C3B1 CANADA			EXAMINER HOANG, HIEU T	
			ART UNIT 2152	PAPER NUMBER
			MAIL DATE 05/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/657,939	Applicant(s) OULD-BRAHIM, HAMID	
	Examiner Hieu T. Hoang	Art Unit 2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-23 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>01/12/2004, 01/19/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the communication filed on 03/19/2007.
2. Claims 1-26 are pending and presented for examination.

Claim Objections

3. Claim 1 is objected to because of the following informalities. Claim 1 recites the limitation "said provider network" on line 7. There is insufficient antecedent basis for this limitation in the claim. For examining purposes, the limitation will be treated as "a network provider." Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ould-Brahim et al. (BGP/GMPLS Optical VPNs, hereafter Ould-Brahim) further in view of Rosen et al. (BGP/MPLS VPNs, hereafter Rosen)

6. For claim 1, Ould-Brahim discloses a network for providing switched virtual circuit Layer-2 VPNs, said network comprising:

- a set of elements interconnected by services (fig. 2, a set of elements containing customer edge routers (CE) and provider edge routers (PE));
- at least one first subset of said elements defining a private network (fig. 2, subset CE's defining virtual private networks such as VPN-A);
- at least one second subset of elements different from said first subset defining a provider network wherein at least two subgroups of said first subset of elements may be connected via said provider network (fig. 2, p. 4 par. 7, subset PE's is a provider network, two subgroups such as the CE1 and the CE2 that are in a same VPN-A are connected together through the PE provider network);
- a provisioning mechanism used to define element membership in said first subset of elements (abstract, single end provisioning, adding a new port to a given VPN only involves changes on the devices connected to that port, p. 3 par. 7 and 8, a pair of CE's could be connected through the service provider, provisioning changes such as adding a new port to a given VPN (or a new member) only affect the PE and the new added CE that is connected to the PE through that port, section 3, par. 1 and 3, each CE has a unique customer port identifier (CPI) within a VPN, defining its membership within the provider network);

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- a plurality of customer ports maintained on said elements of said first subset of elements (section 3, par. 1 and 3, each CE has a unique customer port identifier (CPI) within a VPN, defining its membership within the provider network);
- a plurality of provider ports maintained on said second set of elements, each of said plurality of provider ports connected by services to a customer port (section 3 par. 3, each PE port has a unique provider port identifier PPI);
- a port information table at each element of said provider network having a provider port, said port information table containing mapping information relating addresses of customer ports to addresses of provider ports for said first subset of elements (fig. 2, PE with a port information table, p. 6 par. 3, each PE has a port information table (PIT) containing a list of CPI and PPI pairs);
- a signaling mechanism used to create Layer-2 connectivity between elements within said first subset of elements at the Layer-2 level across said second subset of elements (p. 7 par. 6, GMPLS signaling to create connection between client devices that are connected to the customer edge routers);

Ould-Brahim does not explicitly disclose a reachability distribution mechanism (fig. 2 BGP route distribution between PE's).

However, Rosen discloses a reachability distribution mechanism (p. 7 par. 1, section 4.2.2, route reachability information at CE1 can be distributed to CE2 and CE3 of a same VPN).

Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Ould-Brahim and Rosen in order to apply the

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reachability distribution capability of Rosen to Ould-Brahim's system to use Border gateway protocol (BGP) to distribute VPN routes among PE routers (Rosen, section 4, par. 1)

7. For claim 2, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said reachability distribution mechanism uses a Layer-3 VPN service (Rosen, section 4.2.2, par. 1, VPN-IPv4 is a layer-3 VPN service).

8. For claim 3, Ould-Brahim/Rosen discloses the invention substantially as in claim 2. Ould-Brahim/Rosen further discloses said a subset of Layer-3 VPN service piggybacks VPN routes onto the backbone Border Gateway Protocol (Rosen, section 4, par. 1, BGP is used to distribute VPN routes among PE routers).

9. For claim 4, Ould-Brahim/Rosen discloses the invention substantially as in claim 2. Ould-Brahim/Rosen further discloses said a subset of Layer-3 VPN service uses a virtual router redistribution scheme (Rosen, section 4.2.2, par. 2, redistributing routes either to an autonomous system border router or to a route reflector).

10. For claim 5, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said signalling mechanism is an MPLS signaling mechanism (Ould-Brahim, p. 7 par. 6, MPLS signaling).

11. For claims 6 and 7, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses an auto-discovery mechanism for distributing said mapping information to port information tables of said provider network using Border Gateway Protocol (Ould-Brahim, p. 6 par. 4, 5 and 6, local information (PE PIT information received from the attached CEs) can be distributed to other PEs in of said VPN through a provider network using BGP).

12. For claim 8, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said provisioning mechanism operates in conjunction with said signaling mechanism to restrict element connectivity to elements of said first subset (Ould-Brahim, p. 6 par. 6, import route targets restrict the set of routes that could be imported from provider's BGP into the PIT to only the routes that have at least of these communities).

13. For claim 9, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said data and signalling services have IP signaling services (Rosen, section 4.1, VPN-IPv4).

14. For claim 10, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said customer port addresses need be unique only within said first subset of elements (Ould-Brahim, par. 1, customer port address needs not to be unique across several VPN's).

15. For claim 11, Ould-Brahim/Rosen discloses the invention substantially as in claim 1. Ould-Brahim/Rosen further discloses said customer port addresses and provider port addresses use an addressing scheme chosen from the group of IPv4, IPv6, and NSAP (Ould-Brahim, section 3, par. 1-3, IP address is chosen as port identifier).

16. For claim 22, the claim is rejected for the same rationale as in claim 11.

17. For claim 12, Ould discloses a method of organizing a network having a set of elements interconnected by services, wherein at least one first subset of said elements defines a private network and at least one second subset of elements different from said first subset defines a provider network and wherein at least two subgroups of said first subset of elements may be connected via said provider network, said method comprising:

- defining element membership in said first subset of elements via a provisioning mechanism (abstract, single end provisioning, adding a new port to a given VPN only involves changes on the devices connected to that port);
- establishing a plurality of customer ports within said elements of said first subset of elements (section 3, par. 1 and 3, each CE has a unique customer port identifier (CPI) within a VPN);

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- establishing a plurality of provider ports within said second set of elements, each of said plurality of provider ports connected by services to a customer port (section 3 par. 3, each PE port has a unique provider port identifier PPI);
- establishing a port information table at each element of said provider network having a provider port, said port information table containing mapping information relating addresses of customer ports to addresses of provider ports (fig. 2, PE with a port information table, p. 6 par. 3, each PE has a port information table (PIT) containing a list of CPI and PPI pairs);
- creating Layer-2 connectivity within said first subset of elements at the Layer-2 level across said second subset of elements via a signalling mechanism (p. 7 par. 6, GMPLS signaling to create connection between client devices that are connected to the customer edge routers);

Ould-Brahim does not explicitly disclose determining reachability across said second subset of elements;

However, Rosen discloses determining reachability across said second subset of elements (p. 7 par. 1, section 4.2.2, route reachability information at CE1 can be distributed to CE2 and CE3 of a same VPN).

Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Ould-Brahim and Rosen in order to apply the reachability distribution capability of Rosen to Ould-Brahim's system to use Border gateway protocol (BGP) to distribute VPN routes among PE routers (Rosen, section 4, par. 1)

18. For claim 13, the claim is rejected for the same rationale as in claim 2.
19. For claim 14, the claim is rejected for the same rationale as in claim 3.
20. For claim 15, the claim is rejected for the same rationale as in claim 4.
21. For claims 16 and 17, the claims are rejected for the same rationale as in claims 6 and 7.
22. For claim 18, the claim is rejected for the same rationale as in claim 8.
23. For claim 19, the claim is rejected for the same rationale as in claim 5.
24. For claim 20, the claim is rejected for the same rationale as in claim 9.
25. For claim 21, the claim is rejected for the same rationale as in claim 10.
26. For claim 23, Ould-Brahim/Rosen discloses the invention substantially as in claim . Ould-Brahim/Rosen discloses a method of organizing a network having a set of elements interconnected by services, wherein at least one first subset of said elements

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defines a private network and at least one second subset of elements different from said first subset defines a provider network and wherein at least two subgroups of said first subset of elements may be connected via said provider network (fig. 2, subset of CEs, subset of PEs, two CEs can be connected via a provider network), said method comprising:

- defining a L2VPN topology (fig. 2, VPN topology);
- establishing a plurality of customer ports within said elements of said first subset of elements (section 3, par. 1 and 3, each CE has a unique customer port identifier (CPI) within a VPN);
- establishing a plurality of provider ports within said second set of elements, each of said plurality of provider ports connected by data and signalling services to a customer port (section 3, par. 1 and 3, each CE has a unique customer port identifier (CPI) within a VPN);
- creating a Layer-2 Port Information Table for each provider port; and establishing the identity of customer ports attached to each provider port, and populating the Layer-2 Port Information Table at that provider port with mapping information relating addresses of customer ports to addresses of provider ports (fig. 2, PE with a port information table, p. 6 par. 3, each PE has a port information table (PIT) containing a list of CPI and PPI pairs);
- distributing said mapping information to Layer-2 Port Information Tables of said provider network via an auto-discovery mechanism (p. 6 par. 4, 5 and 6, local

information (PE PIT information received from the attached CEs) can be distributed to other PEs in of said VPN through a provider network using BGP);

- creating Layer-2 connectivity within said first subset of elements at the Layer-2 level across said second subset of elements via a signalling mechanism upon request from an element within said first subset of elements (p. 7 par. 6, GMPLS signaling to create connection between client devices that are connected to the customer edge routers).

Ould-Brahim does not explicitly disclose determining reachability across said second subset of elements via a Layer-3 VPN service.

However, Rosen discloses determining reachability across said second subset of elements via a Layer-3 VPN service (p. 7 par. 1, section 4.2.2, route reachability information at CE1 can be distributed to CE2 and CE3 of a same VPN).

Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Ould-Brahim and Rosen in order to apply the reachability distribution capability of Rosen to Ould-Brahim's system to use Border gateway protocol (BGP) to distribute VPN routes among PE routers (Rosen, section 4, par. 1)

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Yamada et al. US 7,203,762. L2 and L3 VPNs.
- Kim et al. US 2004/0037296. QoS supported bi-directional tunnel and distributing L2VPN membership using extended LDP.
- Ashwood Smith et al. US 2005/0163101. Generalized virtual router.
- Erb et al. US 2003/0026271. L2/L3 network with LSP-enabled routing.
- Forslow et al. US 7,155,518. Extranet workgroup information across multiple mobile VPNs.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

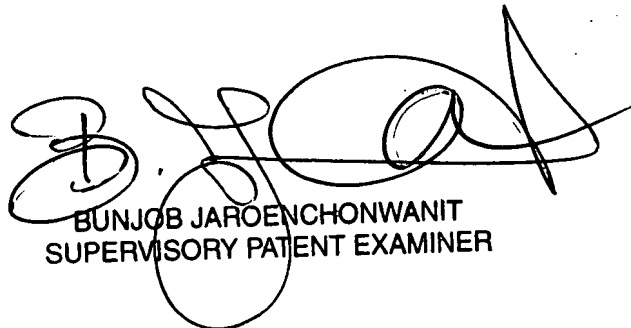
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA

HH



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